The MIT Press

Some Problems in Rationing Meats
Author(s): J. J. Kaplan
Source: *The Review of Economics and Statistics*, Vol. 24, No. 4 (Nov., 1942), pp. 159-165
Published by: MIT Press
Stable URL: http://www.jstor.org/stable/1927671
Accessed: 12-11-2015 18:47 UTC

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at http://www.jstor.org/page/info/about/policies/terms.jsp

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

MIT Press is collaborating with JSTOR to digitize, preserve and extend access to *The Review of Economics and Statistics*.

http://www.jstor.org

This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions

SOME PROBLEMS IN RATIONING MEATS[1]

RATIONING AND PRICE FIXING

THE necessity for some type of stricture on meat consumption was foreshadowed when the Office of Price Administration imposed price ceilings on pork and pork products last March. If a price ceiling is both necessary and effectively imposed, a situation will be created wherein the demand for the commodity involved exceeds its supply. Empty store shelves and queues of people waiting to buy up supplies as they are offered for sale will ensue — a pattern exhibited in the last days of the temporary gasoline rationing scheme in the eastern section of the country. That we did not have this experience in the case of pork may be attributed to the tendency of market prices in the early weeks to reflect expected shortages,[2] to the lag of retail prices behind wholesale prices, and to disguised price advances in the form of quality shifts. Later, the temporary cessation of Lease-Lend purchases eased the situation. As the shortages anticipated in the prices of the ceiling period are actually reached, as price increases via quality shifts reach their limit, and as employment and income payments continue to rise[3] while the taxation and war bond programs fail to keep pace, an excess of demand over supply on the market is to be expected.[4]

Unless a system of rationing under government auspices is adopted, given excessive demand at the fixed price, distributors themselves will have to decide who shall get the available supplies; and their decisions will have to be based on criteria unconnected with what their customers are willing to pay for the particular commodity. Retailers may well welcome government rationing as a means of taking out of their hands the necessity for deciding who shall get how much, and of thus enabling them to avoid the attendant incurring of ill-will on the part of disgruntled patrons.

ROLE OF MEAT IN THE HUMAN DIET

With meat rationing in prospect, several important problems present themselves, — problems with which we have not yet had to deal under the rationing thus far necessary in the United States. In the first place, the problem of attaining an equitable allocation of the meats available is apt to be much more serious than in the case of sugar, if only because meats play a much more important role in the human diet. The recommended low-cost diet of the Committee on Food and Nutrition of the National Research Council calls for meat to provide about 25 per cent of the protein requirement, 20 per cent of the iron requirement, and lesser amounts of all the other essential nutrients. Sugar provides only calories, which are yielded in varying concentration by all foodstuffs. While there are alternative sources of the nutrients provided by meats (raw cabbage is a rich source of iron, and baked beans, cheese, and eggs are important providers of protein), given the meagerness of popular knowledge of nutrition, the consequences of a meat shortage are likely to be serious if the burden is not equitably shared.

ADMINISTRATIVE PROBLEMS IN MEAT RATIONING

Problems of different qualities of product and of closely related substitutes are much more acute in the case of meats than was true of sugar, and they pose important administrative problems. Not only are there several kinds of meat animals, but there are numerous products offered to the consumer from the meat of each kind of animal. The March ceiling price order on pork and pork products specified over 50 items, and still was not all-inclusive. Because of the extreme substitutability of the various meats, virtually all would have to be rationed at the same time. To ration only one would

[1] The basic work in this study was carried out under Project No. 628, Iowa Agricultural Experiment Station, Iowa State College. Professors Schultz and Reid and Mr. Gale Johnson have contributed valuable suggestions and criticisms. The study was undertaken at the suggestion of Professor Geoffrey Shepherd.

[2] Cf. E. M. H. Lloyd, "Some Notes on Point Rationing," this REVIEW, XXIV (1942), p. 51.

[3] This is especially important in the case of meats whose income elasticity is among the highest of the major food groups. Cf. Gold, Waugh, and Hoffman, *The Food Stamp Plan* (U. S. Department of Agriculture, 1940), p. 49.

[4] For a discussion of the reasons for rationing and of alternative definitions of equitable distribution, see J. J. Kaplan, "Rationing Objectives and Allotments, Illustrated with Sugar Data," Journal of Farm Economics, XXIV (1942), pp. 647–64.

This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions

merely divert purchasing power to another, forcing rationing of that item, and so the process could be expected to continue. Rationing of the whole group of items will require some method of weighting each one in the single ration.

Fully as important from the administrative point of view is the problem of controlling the flow of supplies. Supplies must be controlled to provide assurance that the rationed product cannot be obtained for consumption except by surrendering ration coupons. The facts that there are so many producing units,[5] and that on those units can be done whatever processing is necessary to get the product ready for final consumption, mean that preventing substantial black market operations in the event of meat rationing will be no mean task. The experience with gasoline rationing in the East suggests that if the controls are not rigid and complete, the moral sense of the community will not hinder such operations.

The problem of administration is further complicated by the large proportion of our total consumption of all livestock products that comes from home-raised animals. Table 1 shows that

TABLE 1. — FARM AND RETAIL SLAUGHTER OF LIVESTOCK IN THE UNITED STATES IN 1939 *

	Total slaughter	Farm slaughter	Retail slaughter	Farm slaughter as per cent of total slaughter	Retail slaughter as per cent of total slaughter
	(*Unit: 1000 animals*)				
Hogs	66,237	13,648	4,115	20.6	6.2
Cattle	18,809	625		3.3	
Calves	10,668	750		7.0	
Sheep	4,947	331		6.7	
Lambs	27,053	347		1.3	
Chickens	696,931	242,907		34.9	

* Source: *Agricultural Statistics*, 1941.

over 20 per cent of the number of hogs and almost 35 per cent of the number of chickens slaughtered in the United States in 1939 were consumed by the growers' families. Rationing meat consumption by growers would seem to be an almost impossible task, except by means of propaganda and social pressure campaigns. Formal rationing would necessitate forcing farm families who register for ration coupons to declare how much of the various meat products they expect to consume in the form of home-slaughtered livestock during the period covered by the coupons, and to subtract a number of coupons equal to this amount from their ration books. Accurate estimates of this sort would be very unlikely, and checking on the honesty of such estimates extremely difficult. The problem is not only one of preventing farm families from consuming more than their share of available supplies, but even more important, of preventing them from declaring their home consumption to be in excess of what they really anticipate it will be and then diverting this excess into the black market.

The administrative difficulties involved suggest that a formal administrative system of meat rationing is to be avoided if any sort of equitable distribution of meats among consumers can be achieved without it. A public campaign for voluntary curtailment, perhaps similar to the "meatless days" of the last war, might be a solution worthy of investigation if the shortage situation is not expected to be too severe.

DETERMINING THE RATIONING UNIT

Defining the "product" to be rationed is one of the most important problems in rationing meats because of the vast number of substitutable consumer goods involved. Our rationing unit might conceivably be: (1) individual meat cuts (steak, chops, etc.); (2) all the products of an animal (all pork products); (3) all meats; (4) all meats and poultry; (5) all meats, poultry, and seafood. From a nutritional point of view, cheese is also a substitute and might be included in the rationing unit.

The point at issue is that because of the substitutability of various items in consumer budgets, the rationing of any one item may be expected to increase the demand for the others. (The greater the substitutability, the greater the augmentation of the demand.) In so far as the supplies of these substitutes cannot be expanded, either the prices of these substitutes will rise or the necessity for rationing them will appear. It may then be argued that it would be better to place a ration on all the related items in the first place, and to allow consumers to choose the proportions among them which they prefer. With any given supply, consumer satisfaction will thus be maximized.

[5] 3,766,675 farms reported hogs at least four months old on April 1, 1940. See Census report, 1940, preliminary release.

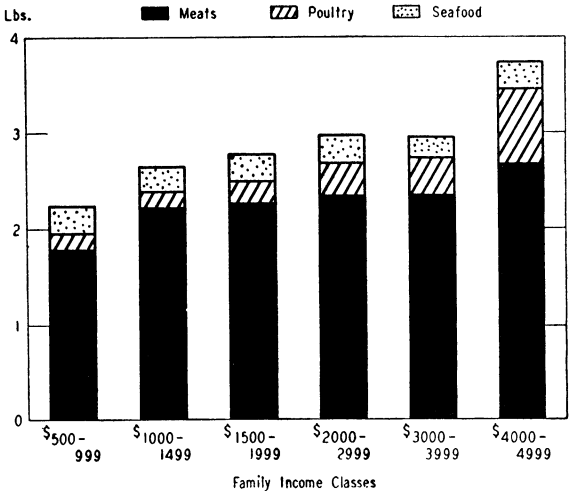
This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions

Assuming that an objective of rationing policy is to protect the low-income consumer from unduly reducing the quality of his diet because of the additional demand for foodstuffs, an equal per capita ration will achieve this objective in the case of "superior" goods, i.e. those goods the consumption of which increases as income rises. In the case of "inferior" goods, the consumption of which decreases as income rises, an equal per capita ration, given a fixed price, restricts low-income families more than high-income families. The steeper the negative slope of the income-consumption curve, the more important is the particular good in the consumption patterns of low-income families, and the more important it is to minimize restrictions placed on their consumption of the product. The fact that consumption of "inferior" goods decreases as income rises indicates that for low-income families there is an absence of close substitutes to which these families could turn in the event of rationing, compared with the availability of such substitutes to higher income people.

The accompanying charts have been prepared from 1935–36 data for the consumption patterns of families in large and middle sized cities in New England and the East Central states, not because these cities are assumed to be typical or representative of the country as a whole, but simply because these data illustrate the sort of information and analysis that can contribute to the better designing of a rationing program.[6]

Chart 1 indicates that consumption per capita of meats as well as of meats, poultry, and seafood combined increases at a progressively decreasing rate as income rises. Remember that the incomes are expressed in 1936 dollars. Poultry has a very high income-consumption elasticity, while seafood does not appear to have any particularly close relationship with income. One may conclude that a meat ration should also include a ration of poultry, for otherwise high-income families will be able to turn to poultry as a substitute for meat with relatively less disturbance than low-income families. If poultry is not included, the apparent equality of consumption provided by the ration will then not actually exist in fact.

CHART 1. — CHANGES IN PER CAPITA CONSUMPTION OF MEATS, POULTRY, AND SEAFOOD, PER WEEK, COMPARED WITH CHANGES IN FAMILY INCOMES, IN LARGE AND MIDDLE-SIZED CITIES OF THE NEW ENGLAND AND EAST CENTRAL STATES, COMBINED, MAY–AUGUST, 1936 *



* Source: United States Department of Labor, Bureau of Labor Statistics, Consumer Purchases Study, Bulletin 648.

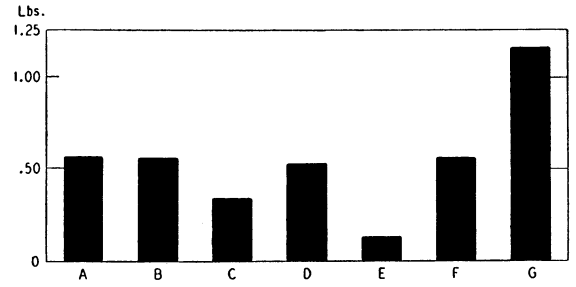
On the other hand, the failure to include fish in the ration will not discriminate against or in favor of any particular income group in this particular area. However, as between this area and the West Central and Rocky Mountain states, for example, there is obvious discrimination in the failure to include fish in the ration unit, because fish consumption in these western states is not half so great as in areas closer to the coast. An equal meat ration in all areas will leave people closer to the coast with a much more readily available substitute in the form of seafood than will be true of inland residents. Chart 2, which shows weekly fresh fish consumption per family for the lowest income groups sampled in various areas, indicates the marked divergence in fish consumption prevailing throughout the country.

[6] One must be cautious in using 1935–36 consumption data as representative of present consumption patterns. The assumption is implicit in the use of budget data that if people's incomes change, their consumption patterns will correspond to those of people in the new income class. This assumption is of doubtful validity unless the recipients of different incomes have had time to adjust themselves to their new income status. We are now in a period when the incomes of a very substantial portion of our population have changed markedly and are still in process of change, so that their consumption patterns are unlikely to be well represented by the patterns of people of their income position in a relatively stable income period such as 1936.

This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions

CHART 2. — WEEKLY CONSUMPTION OF FRESH FISH, PER URBAN FAMILY, FOR FAMILIES WITH INCOMES RANGING FROM $500 TO $999, BY REGIONS, MAY–AUGUST, 1936 *

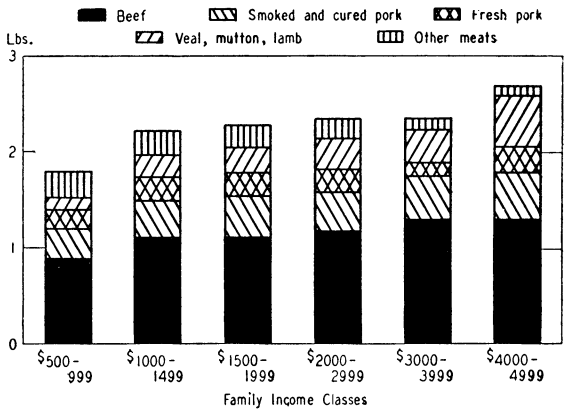
A. N. Y., Chic.
B. N. Eng., E. Cent., large, middle-sized
C. N. Eng., E. Cent., small
D. Southeast, white
E. W. Cent., Rocky Mt.
F. Pacif. N. W.
G. Southeast, negro



* Source: United States Department of Labor, Bureau of Labor Statistics, Consumer Purchases Study, Bulletin 648.

Table 2 and Chart 3 [7] give some indication of the potential consequences of rationing some meats and not others, or even of establishing separate rations for the products of the different animals. The proportion of total meat consumption derived from the products of any one animal varies substantially with income. The rationing of any one of these products will force a greater change in the consumption habits of people accustomed to consume relatively large amounts of the product than of those in whose diets it plays a lesser role. Furthermore, rationing each item separately will force low-income groups to consume, for example, relatively less fresh pork and relatively more veal than they prefer, while the reverse would be true of the high-income groups. Of course, on the assumption of equal capacity for the satisfaction of wants of individuals of similar physiological status, consumer satisfaction will not be maximized so long as some people have more income available for the purchase of this food group

CHART 3. — CHANGES IN WEEKLY PER CAPITA CONSUMPTION OF MEATS, BY VARIOUS KINDS, COMPARED WITH CHANGES IN FAMILY INCOMES, IN LARGE AND MIDDLE-SIZED CITIES OF THE NEW ENGLAND AND EAST CENTRAL STATES, COMBINED, MAY–AUGUST, 1936 *



* Source: United States Department of Labor, Bureau of Labor Statistics, Consumer Purchases Study, Bulletin 648.

TABLE 2. — INCOME-CONSUMPTION RELATIONSHIPS, MAY–AUGUST, 1936, FOR VARIOUS MEATS AND SEAFOOD IN LARGE AND MIDDLE-SIZED CITIES OF THE NEW ENGLAND AND EAST CENTRAL STATES, COMBINED, BY FAMILY INCOME CLASSES *

(*Consumption of $2000–$2999 income class = 100*)

	Family Income Classes						
	$500–999	$1000–1499	$1500–1999	$2000–2999	$3000–3999	$4000–4999	$5000 and over
Total Beef	75.7	93.5	93.7	100.0	109.5	109.7	113.2
Total Veal	65.5	89.2	93.0	100.0	149.2	164.8	116.3
Total Mutton and Lamb	26.4	60.7	78.2	100.0	74.4	169.8	150.2
Total Fresh Pork	85.9	105.6	107.4	100.0	62.2	110.0	113.2
Total Smoked and Cured Pork	76.7	96.2	104.5	100.0	114.2	125.8	174.3
Total Poultry	48.8	57.8	68.9	100.0	117.5	226.5	220.4
Total Seafood	92.9	89.7	94.4	100.0	74.0	96.7	79.1
Total Meats	76.8	94.4	102.5	100.0	100.1	110.4	
Total Poultry and Seafood	69.6	72.8	80.9	100.0	97.0	156.1	

* Based on data from United States Department of Labor, Bureau of Labor Statistics, Consumer Purchases Study, Bulletin 648.

[7] The $5000 and over group figures are not charted since they are not strictly comparable with those of preceding groups, both because of doubts as to the representative character of the data and of vagueness as to the specific income to which they belong.

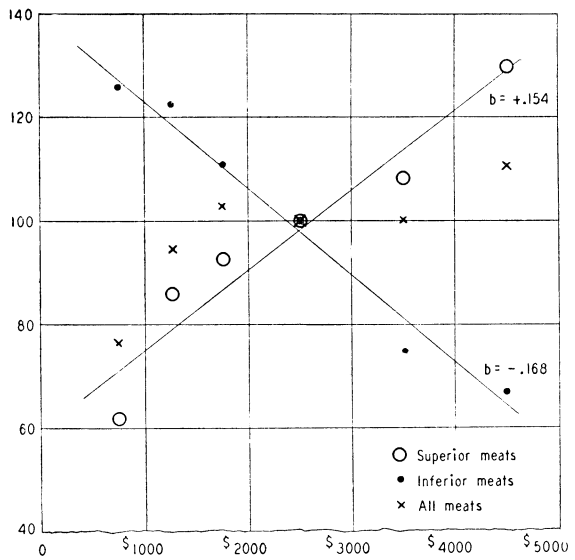
This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions

than others. The wider the income inequalities, the less is a separate and equal per capita ration of the various varieties of meats likely to maximize consumer satisfaction with the given income distribution, because of the differences in prices of the various cuts.

Chart 4 accentuates both the differences in the consumption patterns of different individuals imposed by variations in income and the importance of setting a rationing unit broad enough to protect low-income consumers. By inspection we selected the various meats, the consumption of which tended to decline with income, and combined these meats into a group that we have classified as "inferior" meats.[8] Though the pattern for each of the items included in the group rarely moves downward regularly, the group as a whole shows a definite tendency for consumption to decline as income rises. Despite the presence of only six observations, a straight line fits the data significantly, with a slope of $-.168$.[9] The data for the remaining meats were combined into a "superior" class, though items whose consumption does not appear to be significantly associated with income are also included. Hence, a straight line would not be expected to fit these data so well. The slope of this straight line is $+.154$, not far different from that of the inferior meats. This means that as income increases, consumption of the inferior meats decreases at approximately the same rate as consumption of the rest of the meats increases. A straight line definitely does not fit the data for meats as a whole, because the consumption of inferior meats by all income classes is *absolutely* less than consumption of the rest of the meats. The differences between consumption of inferior and of superior meats widen as incomes increase. Therefore, the same relative change in the consumption of each group results in the curve for all meats sloping positively at all incomes, but much more steeply at low incomes than at high ones.

CHART 4. — PER CAPITA INCOME-CONSUMPTION RELATIONSHIP FOR MEATS IN LARGE AND MIDDLE-SIZED CITIES OF THE NEW ENGLAND AND EAST CENTRAL STATES, COMBINED, MAY–AUGUST, 1936 *

(Consumption of $2000–$2999 group = 100)



* Based on data from United States Department of Labor, Bureau of Labor Statistics, Consumer Purchases Study, Bulletin 648.

This chart indicates clearly that if each individual should receive an equal but separate ration of superior and inferior meats, low-income consumers would have their meat consumption patterns distorted much more than high-income consumers. The former would have to curtail their consumption of the inferior meats more than the latter, and would probably lack the income to purchase their ration of the other meats. High-income consumers, however, would be able to get their rations of both the superior and the inferior meats, though they might well prefer to give up some of the latter in exchange for more of the former.

Of course, this case is extreme; in the rationing process, the separation of meats on this basis is very unlikely. But in so far as there are divergent income-consumption relations for the products of the various meat animals, the allotment of separate rations for each of them will have consequences of this nature, though to a lesser degree than in our example. Table 3 indicates that fresh pork is more important in the consumption patterns of low- than of high-income consumers. A single ration for all meats would make it possible for high-income consumers to contract their fresh pork consumption relatively more than low-income consumers, while the latter would contract their consumption of poultry, lamb, and mutton relatively more.

[8] The "inferior" meats so selected were plate boiling beef, ground beef, veal stew, pork sausage, strip bacon, picnic ham, dry-cured ham, bologna, sausage, canned meat, and cooked whole meat.

[9] The coefficient of determination, r^2, is .879.

This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions

In order to protect low-income consumers, the British have subsidized low prices of some inferior goods and have attempted to maintain supplies great enough to equate demand at these prices. In the case of meats, however, this has not been done. Such a scheme might be possible for inferior meats; and a point system, such as that described below, could be used to prevent high-income families from benefiting from the subsidy of these products.[10]

TABLE 3. — PER CAPITA CONSUMPTION OF ALL PORK, SMOKED AND CURED PORK, AND FRESH PORK AS A PERCENTAGE OF TOTAL MEAT CONSUMPTION AT DIFFERENT FAMILY INCOME LEVELS *

Family income level	All pork	Smoked and cured pork	Fresh pork
$500–999	28.2	17.3	10.9
$1000–1499	28.6	17.6	11.0
1500–1999	29.6	18.9	10.7
2000–2999	27.1	17.3	9.8
3000–3999	25.8	19.7	6.1
4000–4999	28.4	19.0	9.4
5000 and over	31.3	23.4	7.9

* Computed from consumption data for families in large and middle-sized cities in the New England and East Central States, combined, May–August, 1936, taken from United States Department of Labor, Bureau of Labor Statistics, Consumer Purchases Study, Bulletin 648.

VALUE, QUANTITY, OR POINT RATIONING

Whatever we decide the rationing unit shall be, rations can be allotted in terms of values, quantities, or points.

High-income families not only include more meat in their diets than low-income families, but they tend to buy choicer cuts, so that the divergence in meat expenditures among income groups is even greater than the difference in quantities consumed. A value ration would have to be either far below or far above the usual expenditures of many families, and would probably be set between the two extremes. Obviously, at first only the higher-income families accustomed to spend more than the ration would have strictures placed on their consumption. In order to reduce this restriction, high-income consumers could be expected to turn to cheaper cuts. Consequently, the price of choice cuts would fall relative to that of less desired cuts. If the fixed price ceiling on individual cuts is effective, the price of choice cuts will fall while that of the cheaper ones cannot rise, so that the wholesale price of the meat animals will decline. The extent of this drop would depend on the size of the ration and the amount of the ensuing substitution of demand for cheaper cuts in place of choice ones. The value ration assigned per capita would have to take into account (1) the number of people accustomed to spend the amount allowed by the ration, (2) meat expenditures of people accustomed to spend less than the ration, (3) an allowance for a black market exchange of coupons and/or products from the latter to the former group, (4) the expected fall in prices of choice cuts. Some trial-and-error manipulation of the ration would undoubtedly be necessary before demand and supply would be equated. Value rationing has essentially been the system of meat rationing employed by the British.[11]

An alternative system of adjustment may be through the use of coupon points, maintaining the customary price relationships between choice and less desirable cuts and equating demand and supply by varying the number of points that must be given up to get a certain quantity of a given cut of meat. Thus, each individual might be rationed a number of points, which must be given up along with the money price when meat purchases are made. Each meat product is then assigned a given number of points per pound which constitutes its "point price." The point price for each item is determined by the disparity between the maximum money price and the equilibrium price under a free market.[12] This system presupposes a set of money price relationships between the various items which it is desired to maintain; and the establishment of the point prices serves as a mechanism for equating the demand and supply for each item at the given price. This system is being used in Great Britain for rationing a collection of canned foodstuffs. A trial-and-error system is necessary to attain an equilibrium, and periodic adjustments must be made.

[10] Such a procedure was suggested, though not specifically with respect to "inferior" meats, by Mr. H. M. Southworth of the Agricultural Marketing Administration.

[11] See J. H. Richardson, "Consumer Rationing in Great Britain," *Canadian Journal of Economics and Political Science*, VIII (February, 1942), pp. 69–82.

[12] Cf. E. M. H. Lloyd, *op. cit.*, p. 50.

This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions

Finally, it is possible to assign per capita rations in quantity terms. In this case, people are allowed to spend as much as they wish on meats, so long as they restrict their quantitative consumption to the fixed ration. The effects on relative prices are likely to be the reverse of those in the case of value rationing. In so far as the quantities allowed individuals are less than they have been accustomed to purchase or than they would like to purchase with their additional incomes, purchasing power will be freed, given fixed prices. At least some of this can be expected to be directed toward demanding a higher quality meat. The trend at present is in this direction, without rationing, as rising consumer incomes lead to an increased demand for better quality meats. The imposition of quantity rationing could be expected to accentuate that tendency.

Quantity rationing recommends itself because it protects low-income consumers by taking the pressure of demand away from the cheaper meats. Value rationing has much to recommend it from the point of view of the best use of our feed supply in producing nutritive values. The process of feeding cattle beyond a certain point adds quality, but little extra quantity or nutritive value. On the other hand, in the case of hogs, feeding to heavier weights yields badly needed lard, and the quality of the pork is not significantly affected. The point system makes possible maintenance of price relationships between different types of meats, as well as the shifting of demand from one type to another, as supplies or production policy may deem desirable. Also, it has the great virtue of flexibility, in so far as point values can be adjusted to meet specific situations. Point rationing will, however, require a sizeable administrative job of fixing point prices for all the different types of meat cuts purchased.

J. J. KAPLAN

IOWA STATE COLLEGE

This content downloaded from 155.69.24.171 on Thu, 12 Nov 2015 18:47:57 UTC
All use subject to JSTOR Terms and Conditions